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ILLUSTRATED DESCRIPTION
OF THE
FIRST PRIZE IMPROVEMENTS
IN
HARDWARE
AT
THE UNIVERSAL EXPOSITION OF PARIS 1878

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ILLUSTRATED DESCRIPTION
of
Russell & Erwin Manufacturing Co.'s

NEW IMPROVEMENTS IN HARDWARE

Which received at the Universal Exposition of Paris, 1878,
The Five Highest Awards in Five Different Classes.

FACTORIES OF THE COMPANY

AT NEW BRITAIN, CONNECTICUT, U. S. A.

WAREHOUSES

NEW YORK,	Nos. 45 & 47, Chambers Street.
PHILADELPHIA,	No. 425, Market Street.
BALTIMORE,	No. 17, South Charles Street.
LONDON (temporary address),	No. 9, New Broad Street, E. C.

CAST VERSUS WROUGHT IRON HARDWARE

The great prejudice which exists in Europe against American Hardware (on account of the extent to which Cast Iron is employed in its construction) is largely due to the fact that the peculiar qualities of American Castings are not clearly understood.

Owing to the superior qualities of the ores and to the improved system of their manufacture, our Cast Iron is essentially different in many of its properties from any brands made in Europe.

1st. In the process of casting it shrinks much less than other brands of iron, which valuable property enables us to mould it in ornamental patterns composed of smooth surfaces and sharp fine lines, or to produce working parts so uniform and perfect that they require little or no finishing either by hand or machine.

2nd. Instead of being hard and brittle, it is soft, tough and so malleable that when properly made it can be riveted, drilled, or bent with nearly the same facility as malleable iron itself.

The old styles of wrought iron hardware being made from sheet metal of uniform thickness, it was impracticable in lock-making to proportion the size of the parts to the strains to which they were to be subjected, and in order to have certain pieces of sufficient strength, it was necessary to make others much heavier than would otherwise be required. The difficulty in shaping and manipulating wrought metal also obliged the workman, in manufacturing ordinary goods, to confine himself to a very limited number of heavy and uncouth designs.

Our application of cast iron for these uses has enabled us to make a scientific distribution of material, to so shape the working parts that they can be readily finished by machinery, and to produce at greatly reduced cost a variety of new, graceful, and artistic forms.

It is the possession of all these peculiar properties that have enabled American Cast Iron to supersede Wrought Iron in numerous cases, and render it especially suitable for the manufacture of Locksmiths' Work and General Hardware.

A thorough trial has proved that, for all practical purposes, the goods made from it are stronger and more durable than the old, are more uniform and reliable in quality, and more convenient in mechanism, while at the same time they possess tasteful forms and are cheaper in price than the old patterns which they are rapidly replacing.

After very severe trials this opinion was thoroughly endorsed by the Juries at the Paris Exposition of 1878, by the award of the only Gold Medal to the Russell and Erwin Manufacturing Co.'s, for Cast Iron Hardware.

ED 84-125046

SPECIMENS OF ORNAMENTAL PATTERNS IN BRONZED IRON (Registered Designs).



Half size cut of No. 405.
Cupboard Catch.
Price per dozen, 7s.



Half size cut of No. 3 F.
Draw Back, Front Door Lock.
Price per dozen, 36s.



Half size cut of No. 414.
Cupboard Turn.
Price per dozen, 7s.



Half size cut of No. 5015.
(Loose Joint Butt)
Price per pair, 2s. 6d.



Half size cut of No. 5010.
Coat and Hat Hook.
Price 22s. per gross.



Half size cut of No. 8000.
Knob.
Price per doz., pair, 18s.



Half size cut of No. 8006.
Drawer Pull.
Price per gross, 16s.



Half size cut of No. 8003.
Drawer Pull.
Price per gross, 15s.

These goods are made of iron by a new process of machine-casting, which produces ornamental patterns that, without retouching, possess all the perfection in detail of carved or engraved work. After casting, the ornamental surfaces are bronzed by a new chemical process which protects the metal from rusting and imparts to it a rich steel brown colour.

COMPRESSION BRONZES.

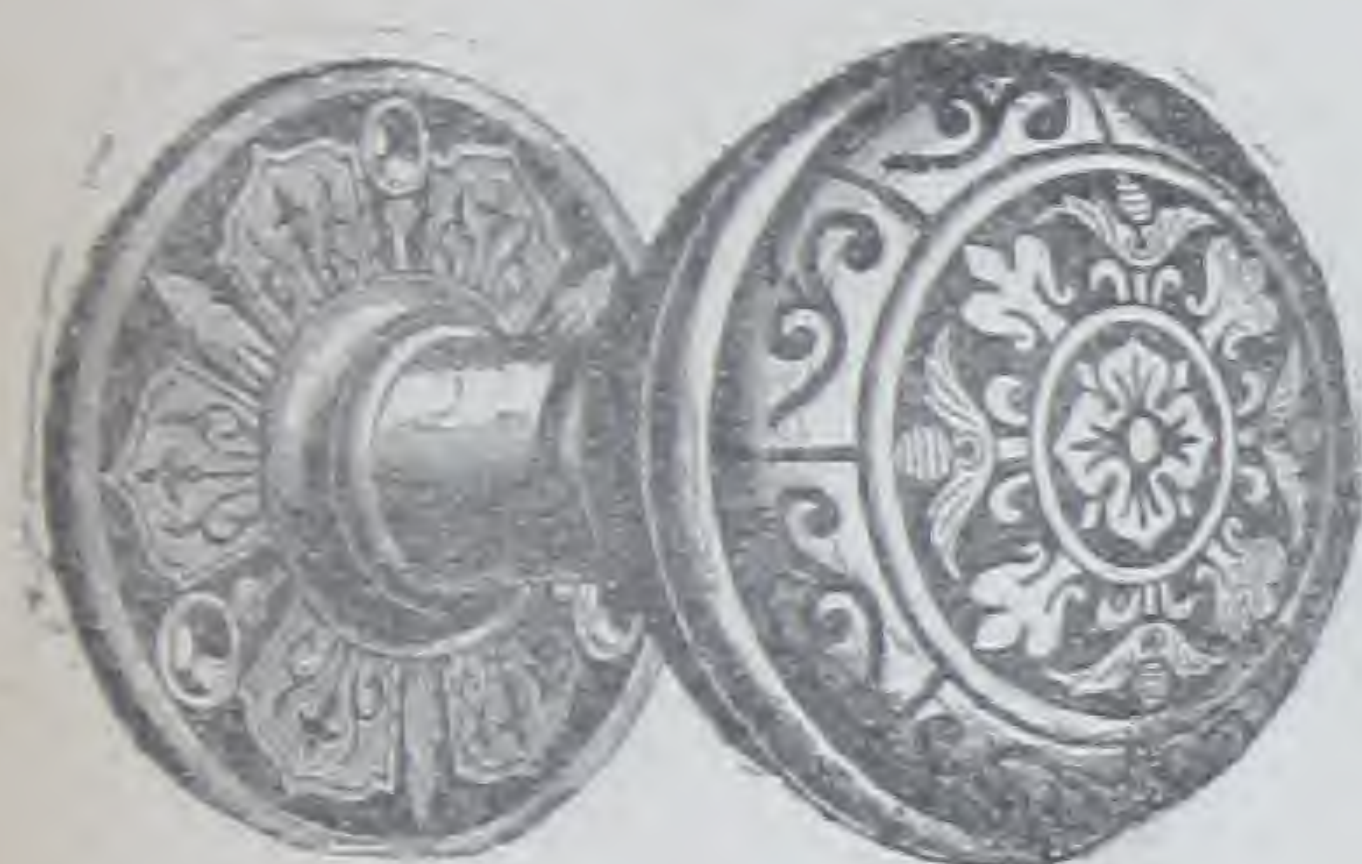
For door, window and fire-place decoration, these goods are manufactured solely by the Russell and Erwin Mfg. Co. upon a new system of Hydraulic Casting, and which received at the Paris Exposition of 1878 the *only* Gold Medal awarded for Architectural Bronzes.

The moulds used in the process are made of sand, on the same general plan as those for ordinary casting except that the interior surfaces are faced with a composition, which becomes very hard and smooth, preserving the design of the pattern much more perfectly than ordinary sand. When completed the sand-moulds are placed in strong cases, the molten bronze poured in, and heavy hydraulic pressure applied, which drives the liquid metal with such force into the fine lines of the mould, that the most minute details are exactly reproduced with all the artistic and sculptured-like sharpness of the original pattern. The quality of the bronze is also very greatly improved in the process, as the heavy pressure expels the air and renders the metal denser, stronger, and more uniform in quality.

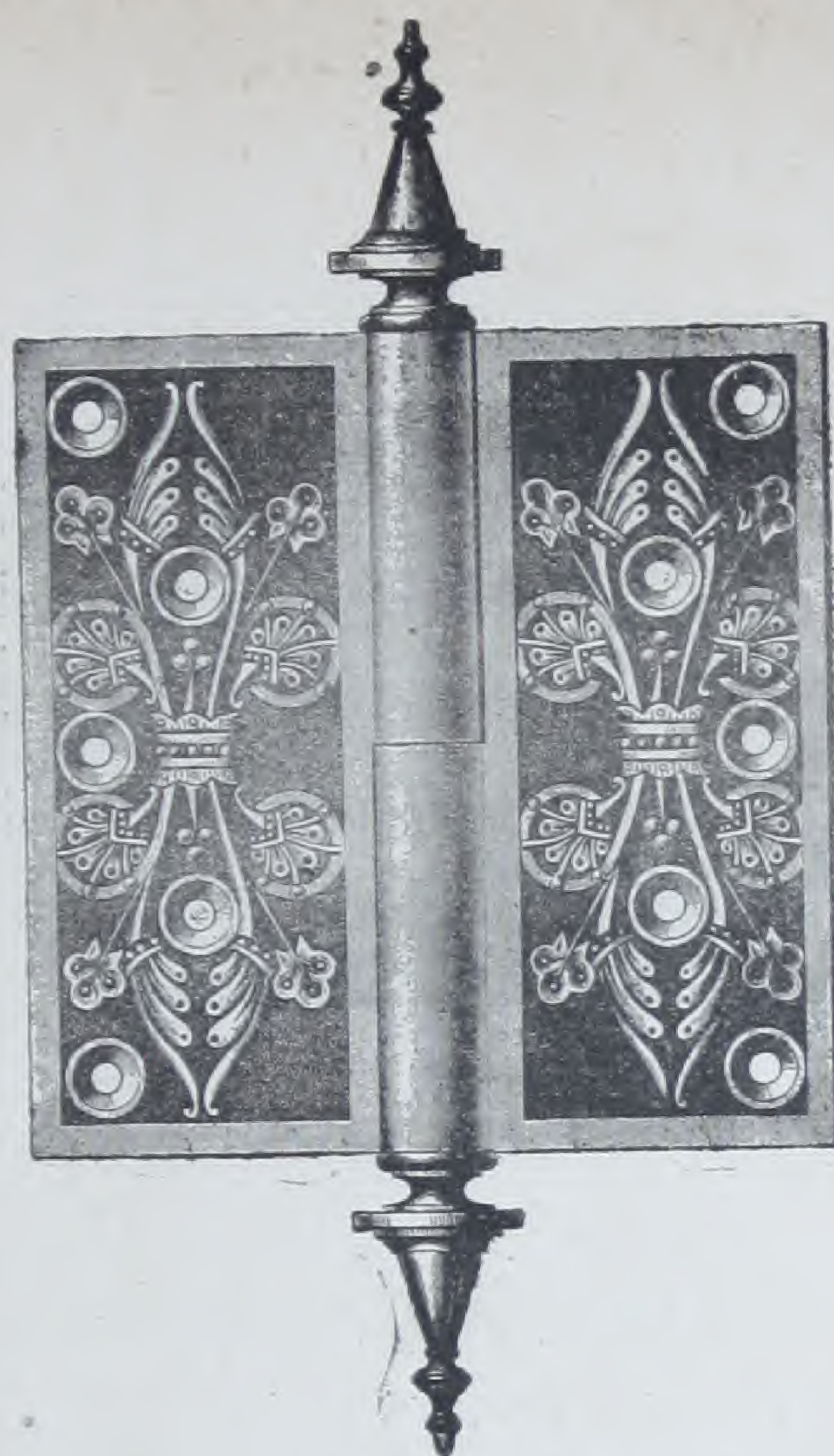
By the old system, the rough castings always required a large amount of retouching to complete them. As this operation was exceedingly slow, and required the services of Art Workmen, it was very costly and the principal item of expense, but by the Compression system all this is avoided, and the rough castings are produced in such a state of perfection that no retouching is required.

We are consequently enabled to produce an extensive assortment of chaste and recherche designs in Art Metal Work, of superior finish, at prices very much lower than has previously been asked for work of similar fine quality.

SPECIMEN ILLUSTRATIONS OF BRONZE DOOR-FITTINGS



Knob, No. 935 ($\frac{1}{2}$ size),
Price, 4s. 6d. per pair.



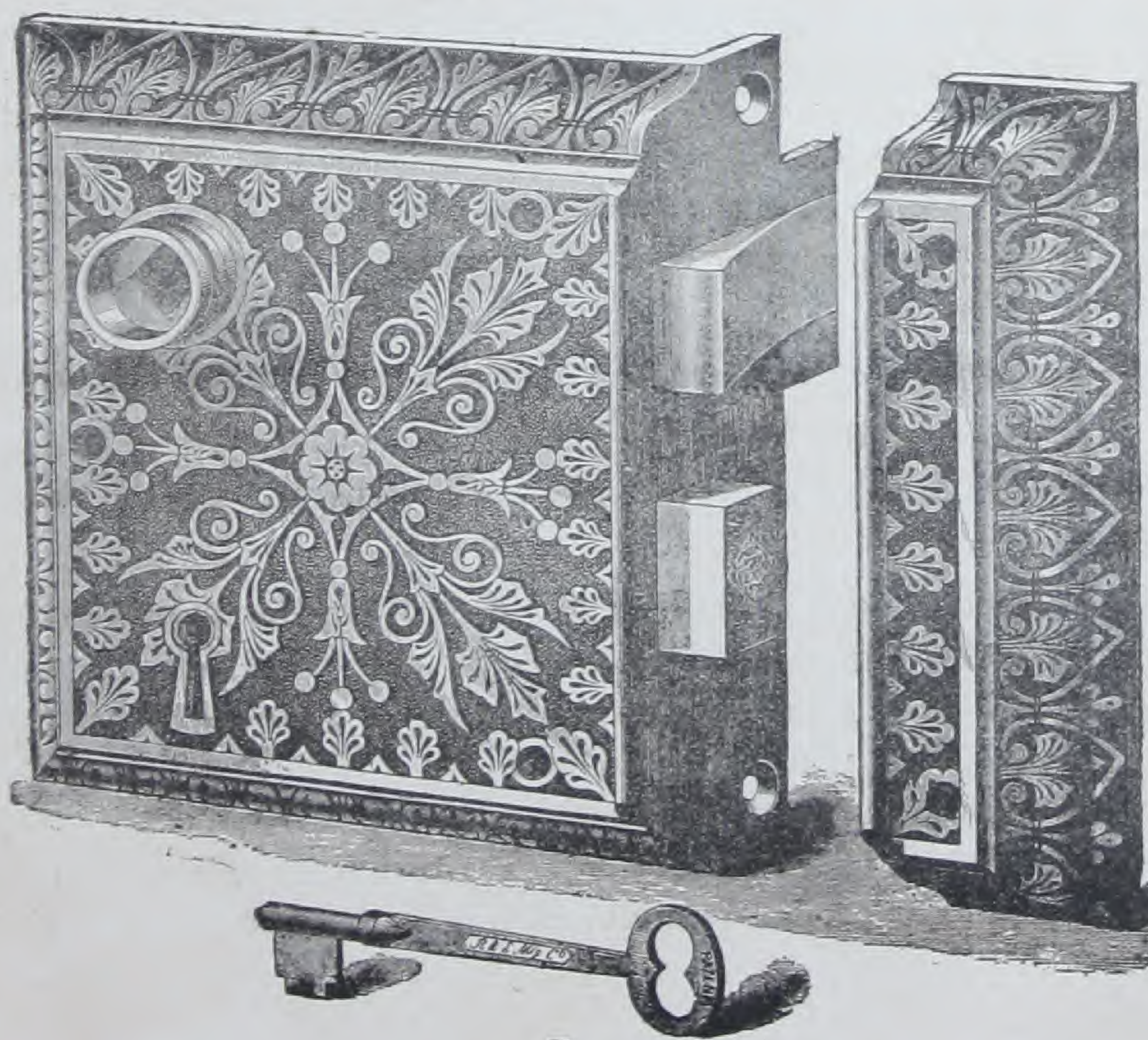
Loose joint Butt, No. 9 ($\frac{1}{2}$ size),
3x3 in 8s. 6d. per pair.
4x4 in 12s. " "
5x5 in 16s. " "



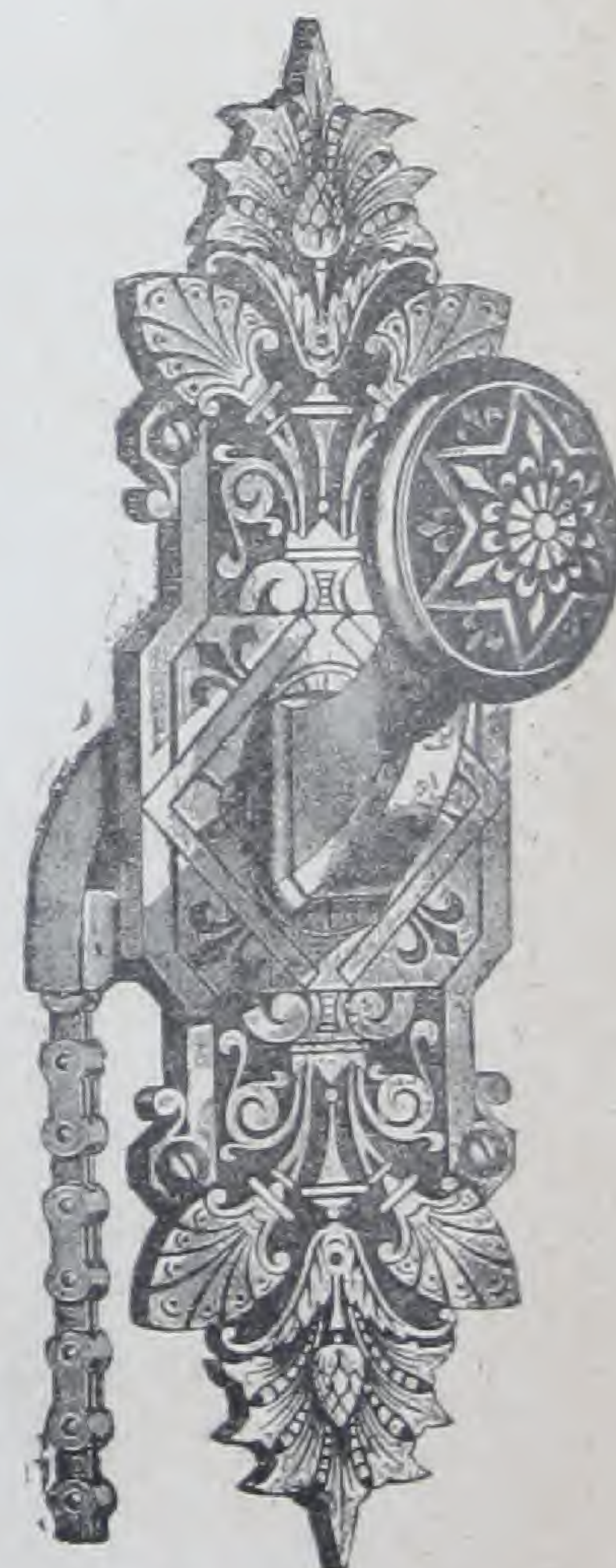
Knob, No. 936 ($\frac{1}{2}$ size),
Price, 10s. per pair.



Door Handle, No. 704
($\frac{1}{2}$ size),
13s. per pair.

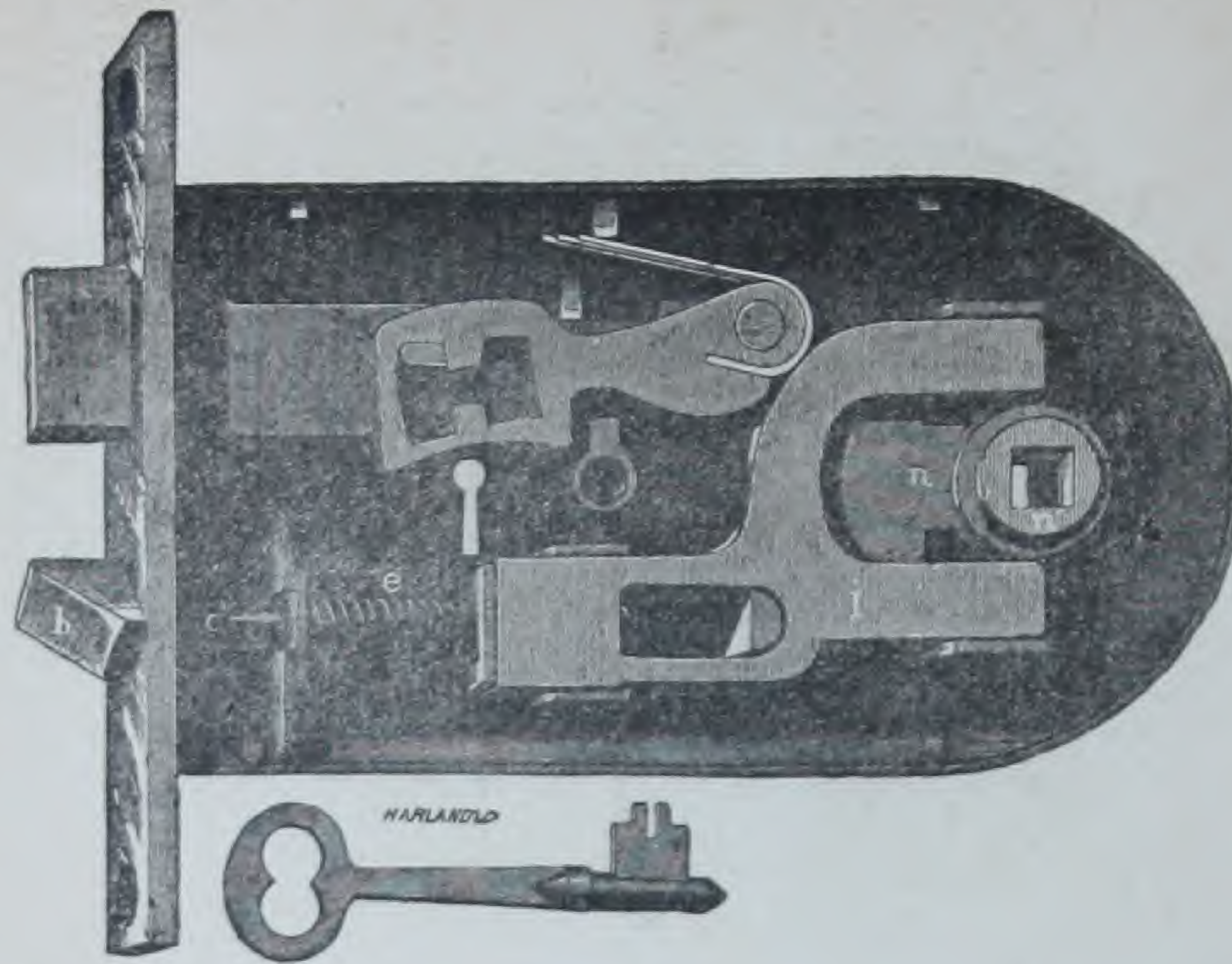


Lock, No. 255 ($\frac{1}{2}$ size),
With Russell, Patent Anti-Friction Latch,
Price, 30s. each.



Bell Pull, No. 40
($\frac{1}{2}$ size),
Price, 13s. each.

Fig. 1.



RUSSELL'S REVERSIBLE LATCHES

BY HER MAJESTY'S ROYAL LETTERS PATENT.

The principal objections which have prevented reversible latches from coming into general use have been :

That their combination of small coil and other springs with necessarily weak and delicate parts rendered them exceedingly liable to break and difficult to repair ;

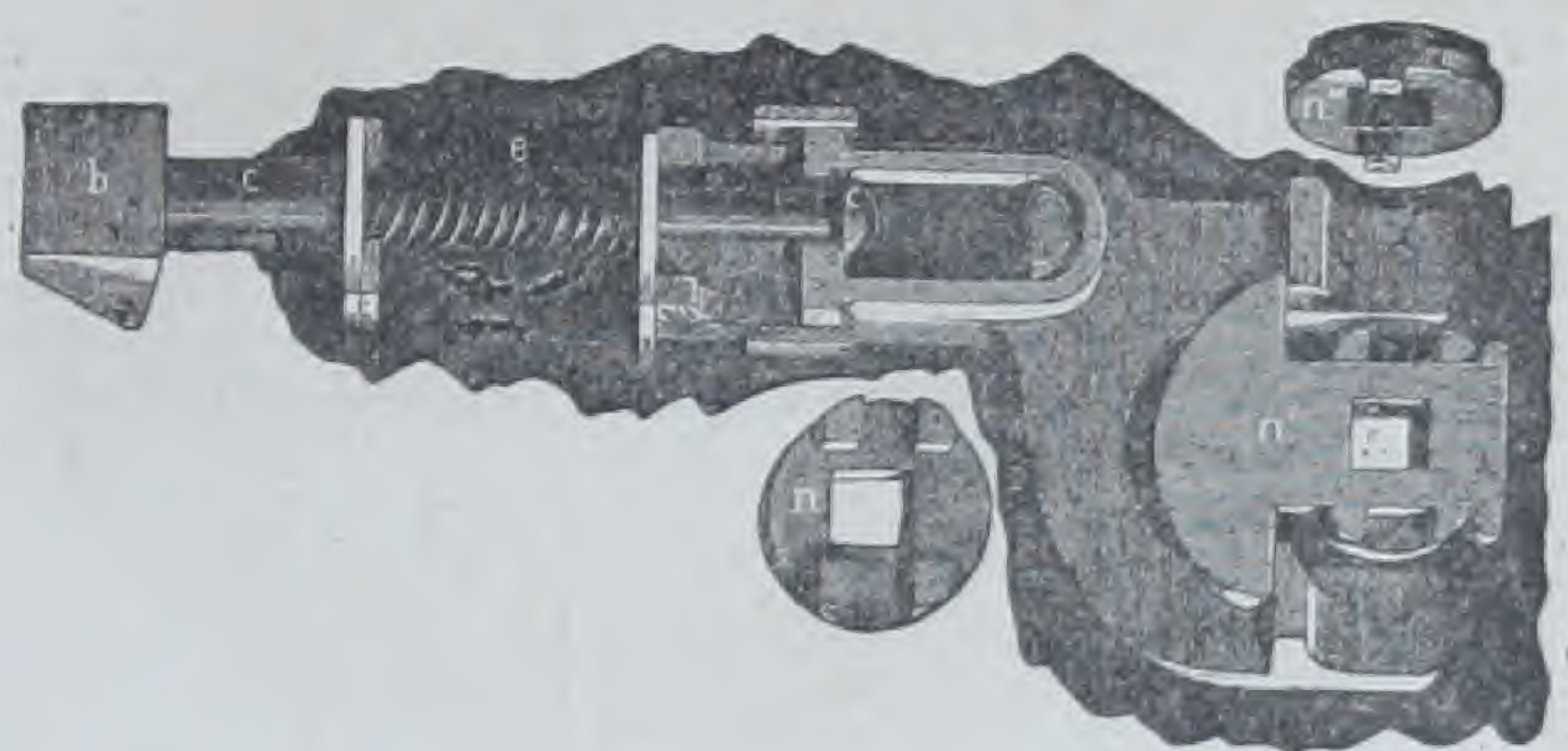
That in mechanisms free from these objections the bolts could be reversed by malicious persons or mischievous children after the latches had been fixed to their doors, and if left in this reversed condition any attempt to close the door would be likely to derange or break the latch.

These difficulties are completely overcome by Russell's new patented improvements.

Fig. 1 shows, $\frac{1}{2}$ size, one of the Russell and Erwin M'f'g Co.'s, 6 in, mortise locks with the cap plate removed so as to expose the working parts. *Fig. 2* shows the same mechanisms in detail.

The Latch Bolt is provided with a head (*b*) of the ordinary form, but its shank is round, and constructed with a shoulder and button at its small end, which serves to connect it with the yoke (*i*) in such a way that its movement in a longitudinal direction is controlled by this yoke, but after the head of the bolt has been drawn forward beyond the face plate of the lock, it can, on account of its swivel connection with the yoke (*i*), be freely turned either to the right or left. The spring (*e*) acts by the pressure plates, to restore the latch to its proper position, after it has been reversed or operated upon by the knob.

Fig. 2.



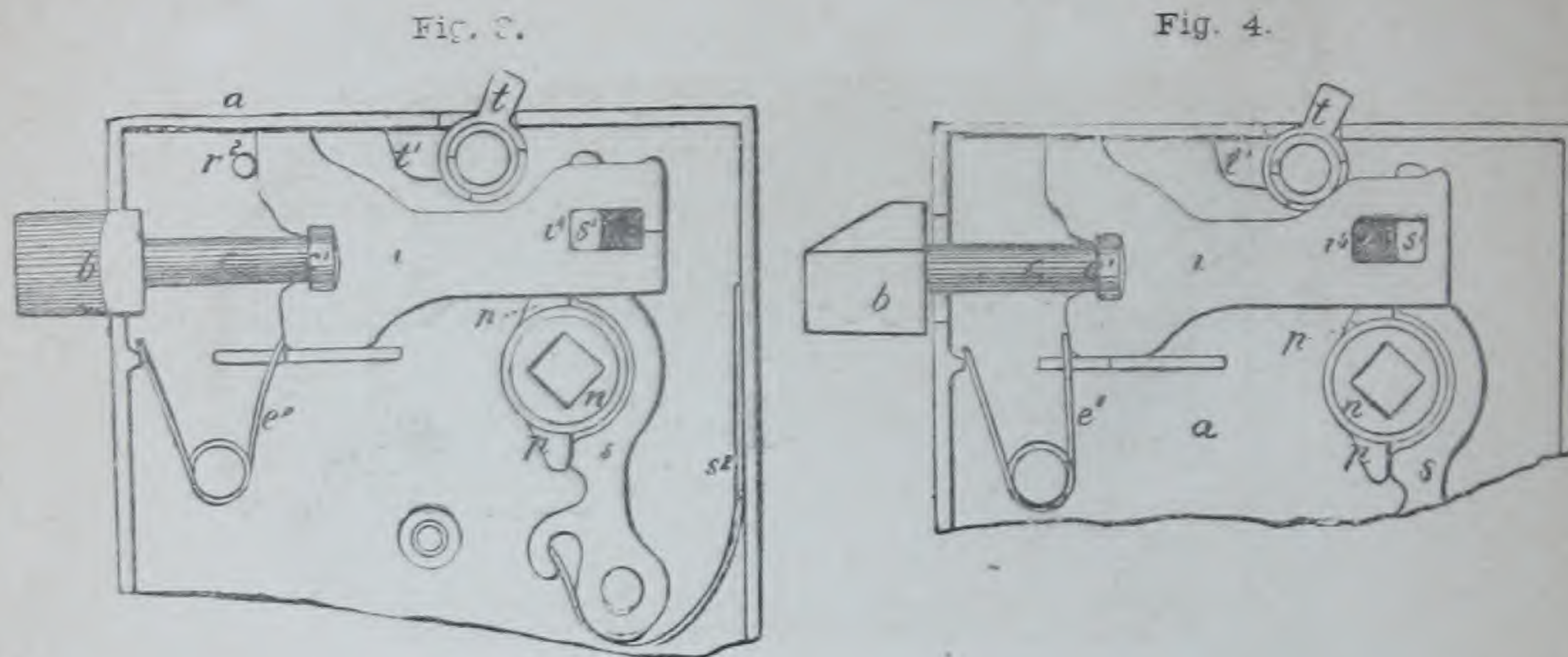
With the ordinary construction of follower it would of course be impossible to draw the latch bolt forward, but it will be seen by an inspection of *Fig. 2* that this follower (*n*) consists of three parts,—the two parts (*n'* and *n''*) are hubs provided with ears (*o*) which dovetail into each other, so as to form of the two a compound hub having a slot in the centre through which the T (*n*) before the knob spindle has been inserted, is free to slide sufficiently to allow the latch bolt to be drawn forward and reversed; but after the spindle has been fixed in its position, this T can no longer be moved, and the three parts are united to form a solid hub, which operates through the yoke (*i*) upon the bolt in the usual way, and of course prevents the reversing of the latch.

Instead of the coil spring shown in the illustration, a heavy flat steel or brass spring can be used with equal facility.

The T (*n'*) is the part of the mechanism upon which most of the wear and strain fall, and is made of wrought iron or steel. The pieces (*n''-n''*) are made of cast-iron or gun-metal.

From the description it will be seen that this invention provides, at very moderate cost, a mechanism which is fully as strong as the old form of latch, not likely to become deranged; and which, before it has been placed upon the door, can be reversed at will by simply pulling out the head of the bolt and turning it half-way round; but once fixed in position it becomes impossible to reverse and it operates as an ordinary latch.

The price of Rim or Mortise Locks provided with this improvement ranges from 1s. to 3s. each (in ordinary and medium qualities).



RUSSELL'S REVERSIBLE LEVER LATCH

BY HER MAJESTY'S ROYAL LETTERS PATENT.

Figs. 3 and 4 show another of Russell's Patent Reverses applied to the Lever Latch of a Rim Lock.

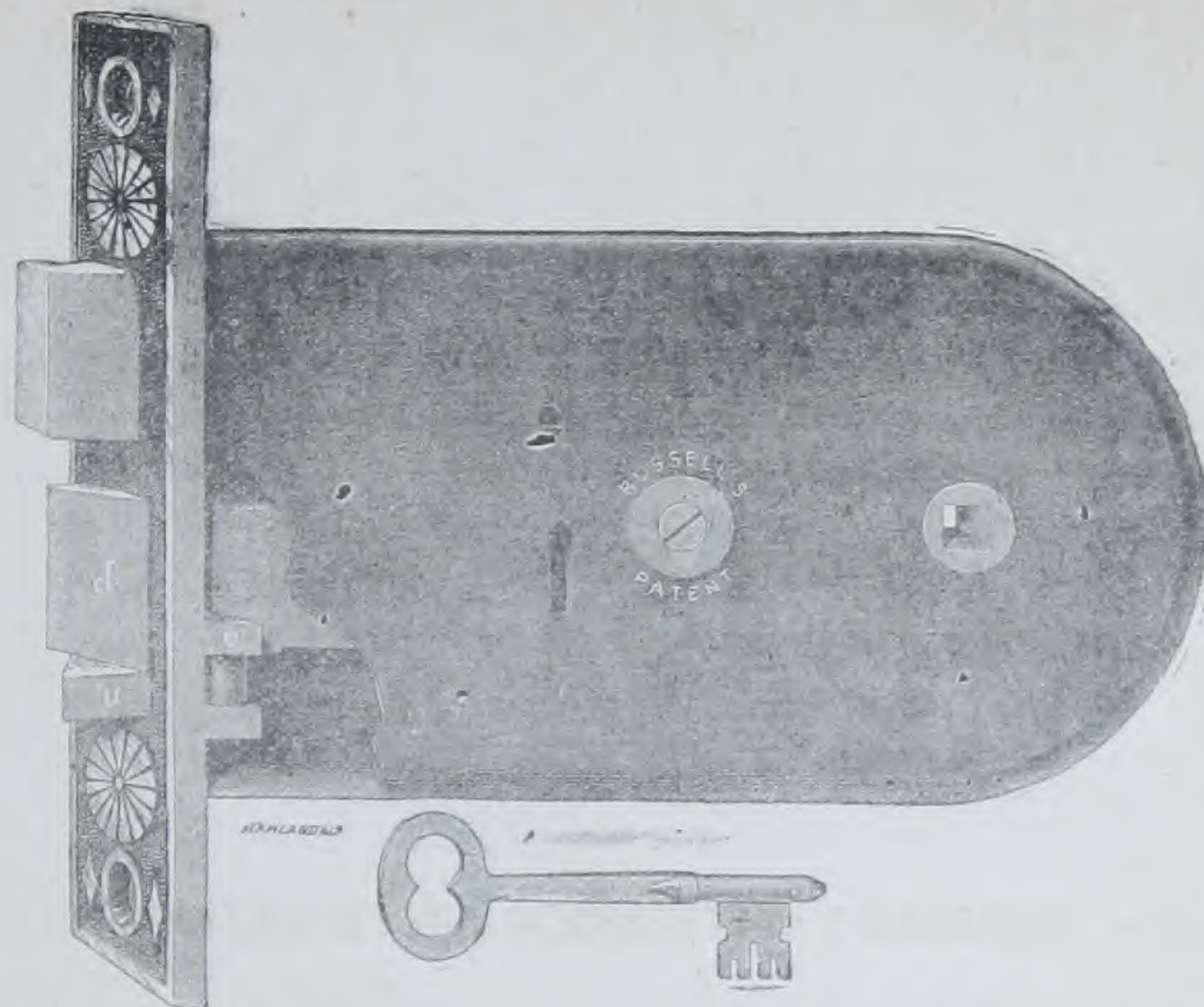
Fig. 3 represents the mechanism in its normal state.

Fig. 4 the same with the bolt drawn out and half-way turned. The stem of the Latch Bolt (*b*) is connected with the slide (*i*) by a swivel motion as in the mechanism previously described, but the slide itself, instead of being combined with a compound follower, is attached by means of the slot (*i¹ i²*) to the pin of the lever. It will be seen by an inspection of the drawing that this slot (*i¹ i²*) exceeds the length of the lever pin (*s'*) by an amount sufficient to allow the bolt to be drawn forward just far enough to clear the front of the face plate, when its swivel connection enables it to be turned at will either to the right or left.

r² represents one of the holes in the lock-case, through which one of the screws that fix it to the door passes. It will be observed that the front edge of the slide *i* (when the latch is in its normal unreversed condition) just reaches to this hole, and that to allow of the reversing of the bolt it must advance and cover it; consequently, after the screw which serves to fasten the lock upon the door has been passed through (*r²*), the plate (*i*) is prevented from advancing, and the latch can no longer be reversed. The cam (*t-t'*) in this lock is another improvement. When turned down it locks the bolt either in or out, and makes it serve the function of a night bolt.

The price of Rim Locks provided with this mechanism varies from 5*d.* to 3*s.* each, according to size and quality.

Fig. 5.



RUSSELL'S ANTI-FRICTION LATCH

BY HER MAJESTY'S ROYAL LETTERS PATENT.

Fig. 5. represents, $\frac{1}{2}$ size, one of the Russell and Erwin Mfg Co.'s, 7 in. Mortise Locks, No. 40 E, provided with Russell's Patent Anti-friction Latch. It is designed to furnish a strong and effective mechanism for reducing to a minimum the friction of latch bolts, and producing a smooth, uniform, and easy action.

The most annoying and serious objection to all the previous forms of latches has been that, in the operation of closing a door, the indirect and unmechanical action of the staple or striker against the beveled edge of the latch caused its flat face to bear directly against the lock case, producing such an amount of friction that the bolt would bind and refuse to move, so that, to be sure of latching doors, it has heretofore been necessary to slam them so violently as to shake loose knobs, hinges, and other furniture, jar the nerves of sensitive neighbours, and often break even the latch itself.

This improvement, by an exceedingly simple, strong, and durable mechanism, causes the striking plate to act directly and without loss of power to force back the bolt, which, in its motion, is entirely withdrawn from contact with the lock case, so that the slightest motion imparted to the door causes it to latch surely, gently, and noiselessly, and renders slamming alike difficult and unnecessary.

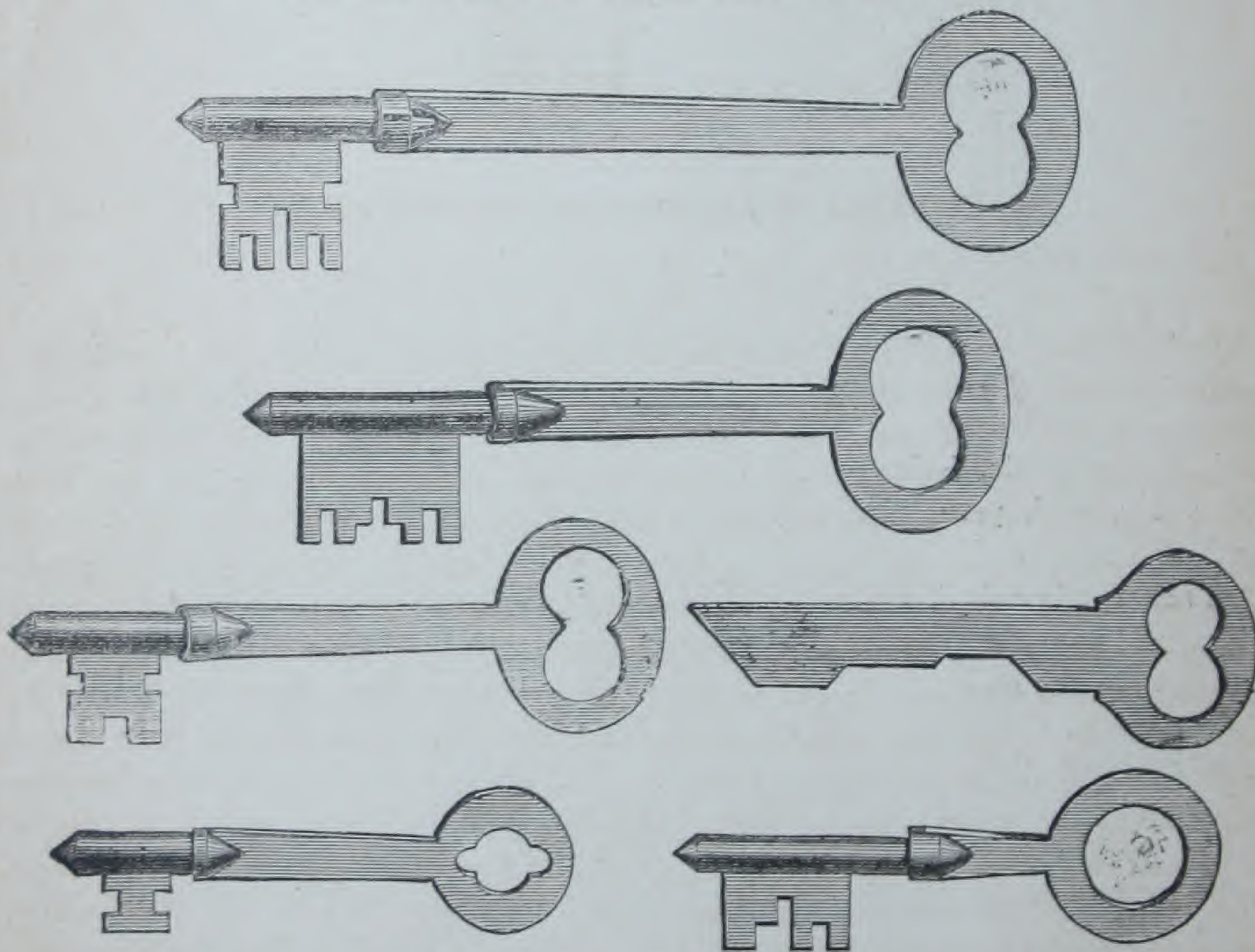
The operation is as follows : — *b* is the latch bolt of the ordinary form, and beneath it is placed an auxiliary latch or controlling lever (*u*), which is pivoted at *u'* so as to swing in a horizontal plane. It is provided with, a pin, on its upper surface, which

projects into a grooved recess in the under side of the latch *b*, and connects the two in such a way that the slightest swinging motion of the lever (*u*) pushes the bolt back, and so guides it in its motion that it is entirely withdrawn from contact with the lock case. It will be observed that the face of the auxiliary latch is in advance of the nose of the bolt, and consequently in operation it comes first in contact with the staple fixed upon the doorway, and acts directly and without any mechanical loss of power to force back the latch.

This mechanism transforms the rubbing into rolling friction upon the nose of the bolt, prevents the extreme pressure upon its face, increases the durability of the lock, and is of especial value for glass or heavy doors. Price from 5*s.* to 15*s.* each.

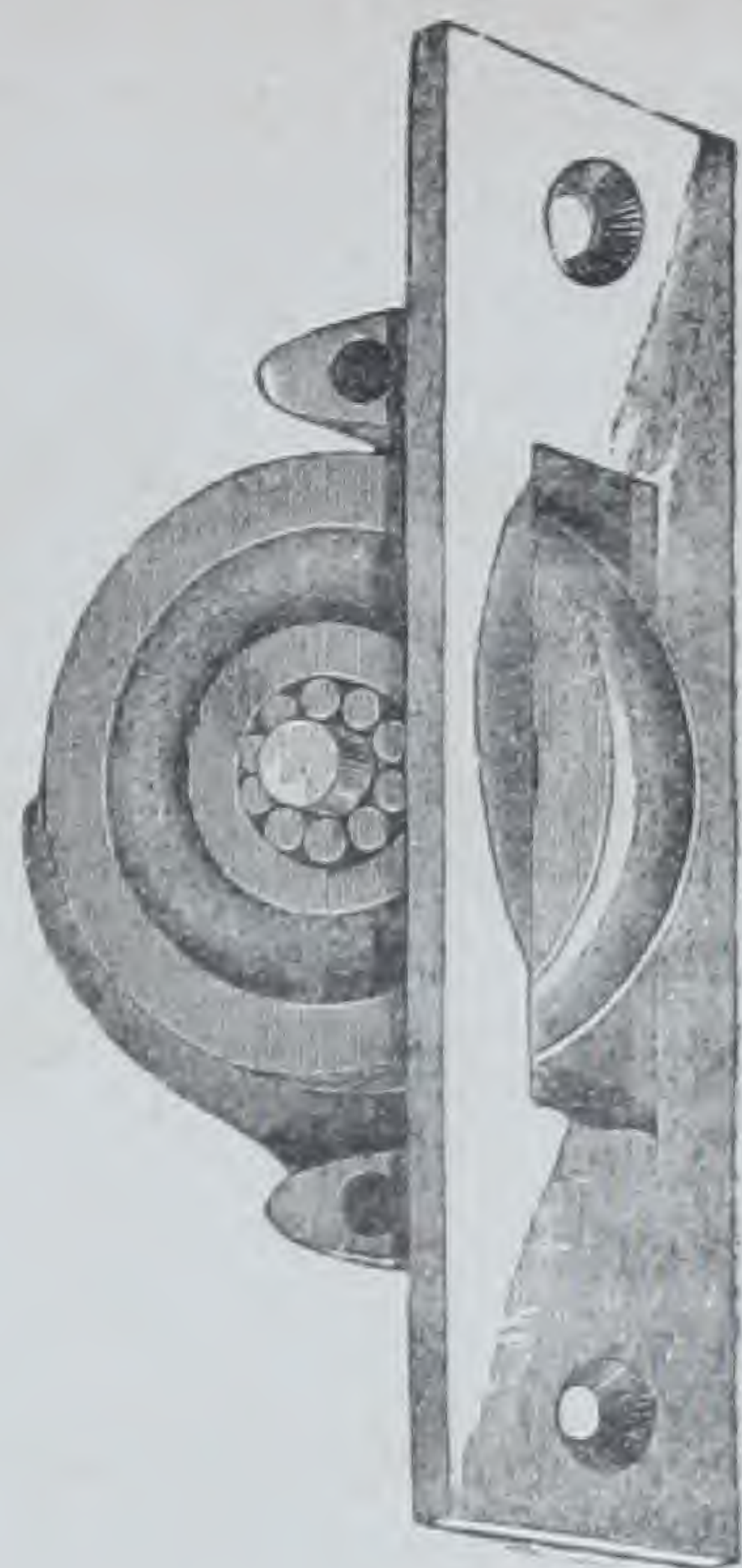
RUSSELL'S STEEL KEYS

BY HER MAJESTY'S ROYAL LETTERS PATENT



The above cut represents (full size) various types of Russell's Patented Steel Keys, for doors and padlocks. The peculiar feature common to them all is that the bow, stem, and bit, of the key are made in one piece from spring steel. Owing to their form and method of construction they are produced entirely by machinery at a very moderate cost. The advantages of these keys, are: they are nickel-plated to prevent rusting, they possess light, convenient, and graceful forms, and combine the highest amount of strength and durability with a minimum expenditure of labour and material.

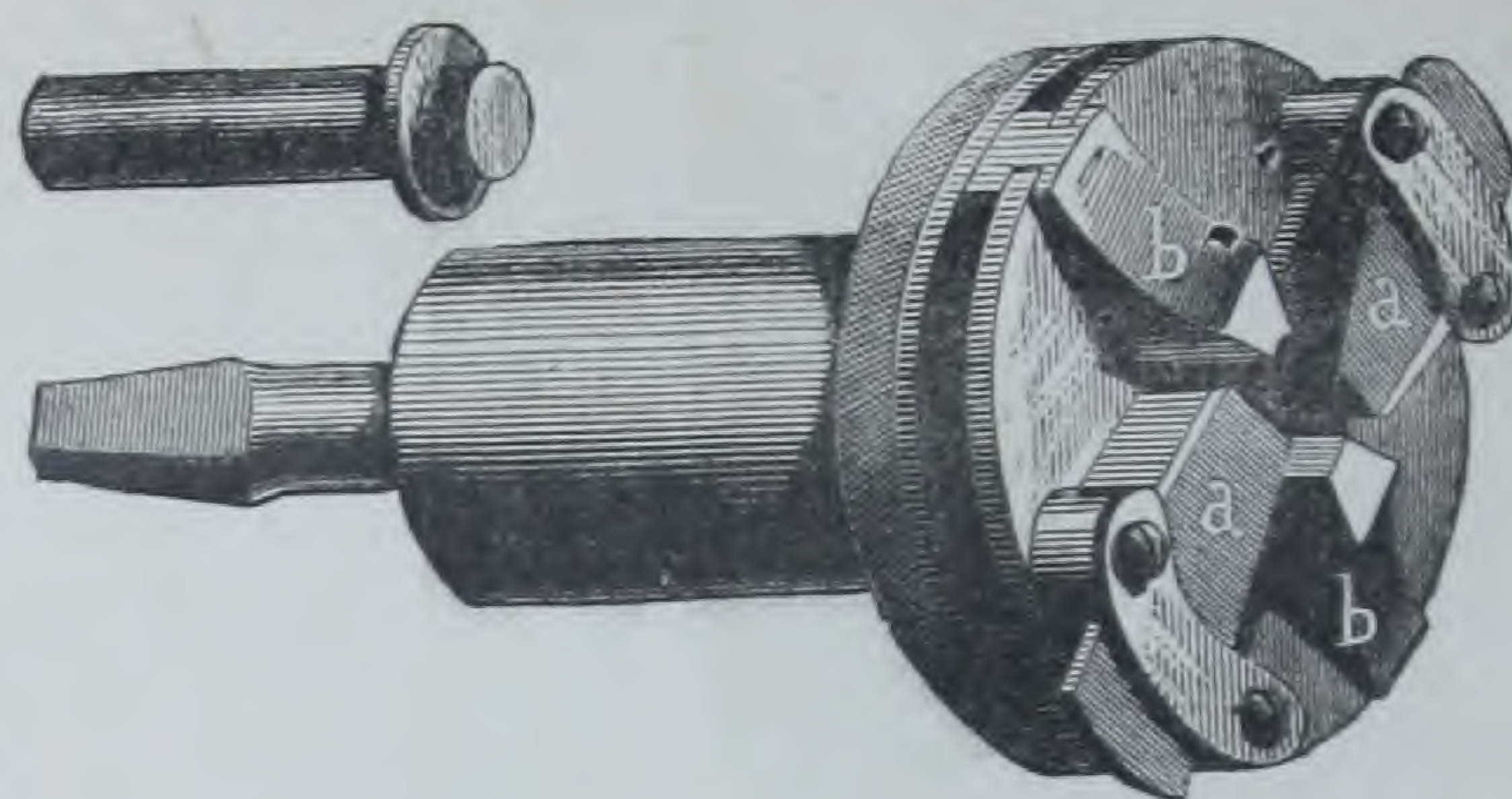
Door Locks furnished with these improved Keys cost from 14*s.* to 60*s.* per dozen.



RUSSELL'S ANTI-FRICTION PULLEY

BY HER MAJESTY'S ROYAL LETTERS PATENT.

The principal defect in the ordinary form of door and window pulleys is that, after they have been fixed in position, the axis of the pulley is not accessible either for cleaning or oiling, and the result is that the gradual gumming of the oil and the accumulation of dust and grit upon the axis, cause it not only to grind out the bearings, but to work with a great deal of noise and friction. These difficulties some inventors have attempted to overcome by providing various forms of oil passages with reservoirs leading from the face of the pulley to its axis, but these have proved only a partial success, from the fact that they greatly disfigure the face of the pulley, do not effectually prevent gumming or grinding, and require frequent cleaning. The peculiar feature of the invention shown in our illustration is that the wheel or sheave is mounted upon a circular series of small anti-friction rollers, made of steel, and fitted so as to run freely around a central pin or axis. These anti-friction rollers are quite free at their ends, and therefore no friction is produced at these points, as is the case where such rollers are supported in revolving rings. It is obvious from the construction that there can be no sliding friction, and the inconvenience and unpleasantness arising from the use of oil is overcome; as there is none but rolling friction, the accumulation of dust makes but little difference in the operation of the mechanism, for the steel pins roll about in it as readily as wheels upon a carriage road. The inventor does not claim that this system of anti-friction rollers is new, but that its simplified construction and improved system of manufacture enable him to produce a greatly-improved article, which, as it prevents the objectionable feature of grinding, is vastly more durable than the old form, and can be produced by machinery to sell for about the same price as a first-class pulley of the ordinary style. Price 13s. 6d. to £4 19s. per dozen.



PATENT UNIVERSAL HOLLOW AUGER

This new machine tool is intended for use either in a Bit stock or lathe. It is similar in principle to a scroll chuck, except that two of the jaws are provided with a clamping device for holding cutters (*a-a*); the other two jaws serve as guides. The four jaws are moved simultaneously from or towards the centre, by means of a scroll thread, which is furnished with a check nut, that prevents the slipping of the jaws after they have been adjusted for any particular-sized tenon. For use as a universal chuck, it is not necessary to remove or in any way derange the cutters, as they are clamped so that their points are a little behind the holding face of the jaws, and cannot touch work that can be fixed in them.

It replaces a whole series of the old form of Hollow Augers, and from its facility of adjustment, and the readiness with which the cutters can be removed for sharpening, it is more efficient as a-cutting tool, while at the same time, and without any change, it answers all the requirements of a universal chuck. Price 20s. each.

N. B.—All of the prices quoted in the preceding pages are subject to a discount to the trade.

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